

least one additional KCNQ alpha subunit, a KCNQ potassium channel having the characteristic of voltage-gating; and wherein said nucleic acid specifically hybridizes under stringent conditions to a nucleic acid encoding an amino acid sequence of SEQ ID NO:5, wherein the hybridization reaction is incubated at 42°C in a solution comprising 50% formamide, 5x SSC, and 1% SDS and washed at 65°C in a solution comprising 0.2x SSC and 0.1% SDS.

42. (new) The isolated nucleic acid of claim 41, wherein said nucleic acid selectively hybridizes under stringent conditions to a nucleic acid encoding an amino acid sequence of SEQ ID NO:4, wherein the hybridization reaction is incubated at 42°C in a solution comprising 50% formamide, 5x SSC, and 1% SDS and washed at 65°C in a solution comprising 0.2x SSC and 0.1% SDS.

43. (new) The isolated nucleic acid of claim 41, wherein said nucleic acid encodes a protein having an amino acid sequence selected from the group consisting of SEQ ID NO:4 and SEQ ID NO:5.

44. (new) The isolated nucleic acid of claim 41, wherein said nucleic acid has a nucleotide sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, and SEQ ID NO:3.

45. (new) The nucleic acid of claim 41, wherein the polypeptide encoded by the nucleic acid comprises an alpha subunit of a homomeric potassium channel.

46. (new) The nucleic acid of claim 41, wherein the polypeptide encoded by the nucleic acid comprises an alpha subunit of a heteromeric potassium channel.